

REMARKS/ARGUMENTS

Claims 2, 13, 18-20 and 28 are canceled. Claims 1, 3-12, 14-17, 21-27 and 29-39 are pending.

The Examiner objected to claims 28, 31, 34, and 37. Claims 31, 34, and 37 have been amended according to the Examiner's suggestion. The limitations of claim 28 have been incorporated into claim 21 and claim 21 has been amended accordingly.

The Examiner rejected claims 1, 3-6, 9-12, and 14-17 under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (US 6,750,150 B2) in view of Kinoshita et al. (US 6,780,708 B1) and Kim et al. (US 6,656,282).

Claims 1 and 14 recite that the formation of a conformal layer by a first and second deposition of first and second gas chemistries which is not made obvious by the cited references. The Examiner agrees that this is not taught by Chung. The Examiner stated that Kinoshita teaches the formation of a conformal layer spacer (46d) on the sidewalls of the mask layer (34a) and teaches that silicon oxide layers and silicon nitride and other nitrides can be deposited using processes selected from the group including PECVD and ALD (col. 8, line 44, to col. 10, line 5 of Kinoshita). Col. 8, line 44, to col. 10, line 5, of Kinoshita does not teach forming the conformal layer spacer (46d) using a first and second chemistry, as recited in claim 1 and in claim 14. The cited section of Kinoshita teaches that layer 18 may be formed by atomic layer deposition. Layer 18 of Kinoshita is not a conformal layer, but a planar layer, as shown in FIG. 2, which may be formed by atomic layer deposition or a spin on process. Kim in col. 1, line 27 to col. 2, line 14, and col. 6, lines 45-67, do not teach the formation of a conformal layer. Therefore, it would not be obvious to use the teachings of Kinoshita and Kim to form the conformal layer of Chung. The Examiner failed to point out anything in the cited references that suggest that atomic layer deposition would be successful in providing a conformal layer.

For at least these reasons, claims 1 and 14 are not made obvious by Kung in view of Kinoshita and Kim.

The Examiner rejected claims 7 and 8 under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (US 6,750,150 B2) in view of Kinoshita et al. (US 6,780,708 B1) and Kim et al. (US 6,656,282) and in further view of Yamamoto et al. (US 4,151,034).

Atty. Dkt. No. LAM1P177/P1139

10

App. No. 10/648,953

The Examiner rejected claims 21 to 24 and 35 under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (US 6,750,150 B2) in view of Moslehi (US 5,273,609). Claim 21 has been amended to incorporate the limitations of claim 28, which has been canceled. For at least this reason, claim 21, as amended, is not made obvious by the cited references.

Claim 24 has been rewritten as an independent claim. Neither Chung nor Moslehi teach or suggest that the processes taught individually or in combination would have a likelihood of success of reducing the spaces by more than 50%, as recited in claim 24. In addition, nothing in the cited references suggest that it is possible to perform the process of Chung in a single chamber. For at least these reasons, a claim 24, as amended, is not made obvious by the cited references.

The Examiner rejected claims 21 and 25 under 35 U.S.C. 103(a) as being unpatentable over Yang (US 5,296,410) in view of Moslehi (US 5,273,609). Claim 21 has been amended to incorporate the limitations of claim 28, which has been canceled. For at least this reason, claim 21, as amended, is not made obvious by the cited references.

The Examiner rejected claims 27 and 36 under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (US 6,750,150 B2) in view of Moslehi (US 5,273,609) in further view of Yamamoto et al. (US 4,151,034).

The Examiner rejected claims 29 and 32 under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (US 6,750,150 B2) in view of Kinoshita et al. (US 6,780,708 B1) and Kim et al. (US 6,656,282) and in further view of Moslehi (US 5,273,609).

The Examiner rejected claims 30 and 33 under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (US 6,750,150 B2) in view of Kinoshita et al. (US 6,780,708 B1) and Kim et al. (US 6,656,282) and in further view of Moslehi (US 5,273,609) in further view of Yamamoto et al. (US 4,151,034).

Dependent claims 3-12, 15-17, 22-23, 25-27, 29-34, and 36-39 are also patentably distinct from the cited references for at least the same reasons as those recited above for the independent claims, upon which they ultimately depend. These dependent claims recite additional limitations that further distinguish these dependent claims from the cited references. For example, claims 7, 8, 30, and 33 recite stripping the photoresist mask and conformal layer with a single stripping step. The Examiner cited col. 1, lines 7-17, of Yamamoto as teaching

such a single stripping step. Yamamoto, col. 1, lines 7-17, discloses that a gas plasma for etching silicon nitride or ashing photoresist. However, Yamamoto does not teach stripping a photoresist and conformal layer in a single step. The silicon nitride in Yamamoto is not stripped, but instead etched. If such etching was performed during the strip, the silicon oxide would also be etched, which is undesirable. Claim 7 does not recite a simultaneous stripping and etching, but instead stripping a conformal layer and a photoresist mask in a single step.

In addition, claims 4 and 11 further recite that the second critical dimension is not greater than 70% of the first critical dimension. Nothing in the cited references teaches or suggests that the combined references would successfully reduce the critical dimension to the claimed amount. The ability to provide sufficiently conformal walls to allow such a reduction was an unexpected result. For at least these reasons, claims 3-12, 15-17, 22-23, 25-27, 29-34, and 36-39 are not anticipated or made obvious by the cited references.

The Examiner stated that claims 28, 31, 34, and 37 would be allowable if rewritten to overcome the claim objection set forth in the office action and to include all limitations of the base claim and any intervening claims. In addition, the Examiner stated that claims 38 and 39 would be allowable if rewritten to include all limitations of the base claim and any intervening claims. Claims 31, 34, and 37 have been amended to overcome the Examiner's objection. Claim 21 has been amended to incorporate all of the limitations of claim 28 and claim 28 has been canceled accordingly. The applicant's attorney appreciates the Examiner's comments. Claims 31, 34, and 37-39 will also be amended to be placed in independent form if required at a later time.

Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at telephone number (650) 961-8300.

Respectfully submitted,

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Atty. Dkt. No. LAM1P177/P1139

12

App. No. 10/648,953